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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/812,073

03/20/2001

Christopher Freitas

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07/13/2004

CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC

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SEATTLE, WA 98101-2347

EXAMINER

DEBERADINIS, ROBERT L

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/812,073

Applicant(s)

FREITAS ET AL.

Examiner

Robert DeBeradinis

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2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The reply filed 5/18/04 consists of amending claim 1 and remarks related to rejection of claims. The claims are not allowable for the following reasons.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 8, 10, 16, 17 are rejected under 35 U.S.C. 102(a) as being anticipated by SAXELBY 6,549,409.

Regarding claim 1.

SAXELBY discloses an energy conversion apparatus comprising a heat conductive base (202); a cover (214) operable to mate with the base so as to form a sealed space bounded by the cover and the base to prevent ingress of moisture; and a mount inside the space, for securing an energy conversion circuit to at least said base (figure 2, column 1, lines 13-28).

Regarding claim 8.

SAXELBY discloses wherein said base is formed from metal (column 1, line 16).

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Regarding claim 10.

SAXELBY discloses wherein said base has a transformer mount, for mounting transformer (234) of said energy conversion device.

Regarding claims 16, 17.

SAXELBY discloses several converter shapes refer to the figures, the form factor is an inherent part of a design therefore no merit is given to the form factor.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2- 4, 7, 12, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over SAXELBY 6,549,409 in view of PELL 6,084,772.

Regarding claims 2, 4, 12.

SAXELBY discloses the apparatus in claim 1 and teaches a lid 214 mates with a lip 216 around the perimeter of the converter assembly and an encapsulant 218 fills the remaining space within the package.

SAXELBY does not disclose the space within the package having sealed air and having a vent in at least one of said base and said cover for venting humid air from said space.

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PELL discloses a sealed air enclosure (column 1, lines 38-41) having humidity control, a Goretex patch 21 provides for controlled moisture exchange with the external environment (column 8, lines 57-64).

The above references do not teach encapsulant weight.

HARTNETT discloses that encapsulant has weight (column 8, lines 59-67).

It would have been obvious to one having ordinary skill in the art at the time of this invention to modify the apparatus of claim 1 to have air in the sealed space instead of the encapsulant and to provide a vent as disclosed by PELL. The motivation not to use the encapsulant would have been to reduce the weight of the apparatus and the motivation to use a Gortex vent would have been to provide a means to vent hot air from the enclosure without exposing the enclosed air to external moisture (PELL, column 1, lines 38-40)

Regarding claim 3.

The above references do not disclose wherein said vent is located in said base.

JANIK discloses concentrating the cool airflow directly on a hot spot will increase the amount of heat that is removed from a module.

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide the vent in the base. The motivation to locate the vent in the base would be to vent the hottest air from the enclosed environment to the external environment to prevent this hot air from increasing the enclosed environment air temperature.

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Regarding claim 7.

The above references do not disclose wherein one of said base and said cover has sealable openings through which electrical conductors may pass.

BURKE discloses hermetic electrical connector providing the means to pass electrical conductors through sealed openings.

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide sealable openings through which to pass conductors. The motivation would be to interface the sealed enclosed energy conversion device with control circuits external to the apparatus.

Regarding claim 21.

SAXELBY discloses the apparatus of claim 12, including circuit board (210).

SAXELBY does not disclose a plurality of circuit boards wherein mount includes holders in said base and in said cover for holding said circuit boards of said energy conversion device in spaced apart relation.

PELL discloses plurality of circuit boards mounted in spaced apart relation.

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide holders in said base and in said cover. The motivation to include such a mount would be to secure the plurality of circuit boards in the enclosed space in such a manner to efficiently remove the heat from the enclosed space.

Regarding claim 22.

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SAXELBY in view of PELL disclose the apparatus of claim 21 wherein one circuit board is permitted to move relative to the other.

SAXELBY in view of PELL do not disclose the feature of facilitating sealing between components on said circuit boards and said cover while permitting access to said components, from outside the cover.

FIORAVANTI discloses a contamination resistant probe attachment device to provide access to a sealed environment without unsealing the environment.

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide the means seal a component from the sealed enclosure and provide access to the component. The motivation to seal the component from the enclosure is to enable adjustment of the component without unsealing the enclosure.

Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over SAXELBY 6,549,409 in view of PELL 6,084,772 and BOUTIN 4,987,919. Regarding claims 5, 6.

SAXELBY discloses the apparatus of claim 1 having the enclosed space encapsulated.

SAXELBY does not disclose a drain for draining liquid from inside said space.

PELL discloses sealed air space requiring moisture control.

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BOUTIN discloses condensation of moisture in a tank is a problem and provides a means for automatically draining moisture from tank.

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide a drain for draining liquid from inside said space when the enclosed space is not encapsulated. The motivation would be to empty the enclosed air space from any liquid that has accumulated due to condensation.

Claims 9, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

SAXELBY 6,549,409 in view of OYA 6,107,788.

Regarding claims 9, 18.

SAXELBY discloses the apparatus of claim 1.

SAXELBY does not disclose wherein said base has means for mounting said apparatus to a battery mount.

OYA teaches the converter should be located close to the battery (column 3, lines 37 plus).

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide a means for mounting said apparatus to a battery mount.

The motivation would be to locate the apparatus close to the battery to suppress voltage ripple.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over SAXELBY 6,549,409 in view of HIERS 5,278,002.

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Regarding claim 11.

SAXELBY discloses the apparatus of claim 1 having a cover (lid 214).

SAXELBY does not disclose the type of material the lid is made of.

HIERS discloses a battery cover for protecting a battery made of rigid molded plastic (column 2, line 21).

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide a molded cover formed of plastic. The motivation would have been to provide a rigid cover to protect the apparatus.

Claims 13, 14, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over SAXELBY 6,549,409 in view of PELL 6,084,772. in further view of OOTANI 6,353,309

Regarding claims 13, 14.

SAXELBY in view of PELL disclose the apparatus claimed in claim 12. PELL discloses operating sealed enclosure in +85 degree ambient air temperature.

SAXELBY in view of PELL do not disclose wherein said energy conversion circuit includes a plurality of switching devices configured to reduce heat generation sufficient to permit said energy conversion circuit to operate while said apparatus is in an ambient temperature range between about -40 degrees centigrade to about +85 degrees centigrade.

OOTANI discloses a plurality of switching devices in a converter to reduce power loss (heat generation).

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It would have been obvious to one having ordinary skill in the art at the time of this invention to provide a plurality of switching devices configured to reduce heat generation sufficient. The motivation would be to achieve by designing the thermal control to keep the energy conversion circuit at 7 degrees C to 10 degrees C above ambient temperature (PELL, column 8, lines 56 plus). Regarding claim 15.

SAXELBY in view of PELL and OOTANI disclose the apparatus of claim 13.

The above references do not teach wherein a transformer is configured to reduce heat generation sufficient to permit said energy conversion circuit to operate while said apparatus is in an ambient temperature range between about -40 degrees centigrade to about +85 degrees centigrade.

SAXELBY discloses energy conversion circuit includes transformer (234).

PELL discloses wherein high thermal flux components, 10W to 50W, may be mounted on individual boards within the enclosed unit (column 1, lines 25-33).

It would have been obvious to one having ordinary skill in the art at the time of this invention to include a transformer configuration to reduce heat generation. The motivation would be to maintain the apparatus operating temperature to be within the 7 degrees C to 10 degree C temperature rise above ambient temperature (PELL, column 8, lines 56-64).

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Claims 19, 20, 23, 24, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over SAXELBY 6,549,409 in view of PELL 6,084,772 in further view of HAMMOND 4,487,300

Regarding claims 19, 23.

SAXELBY discloses the apparatus of claim 12, including circuit board (210).

SAXELBY does not disclose a plurality of circuit boards and a vibration damper for dampening vibrations of said circuit boards.

PELL discloses a plurality of circuit boards (34, 36, 38).

HAMMOND discloses a vibration adjustable spacer (10), used to damp the vibration resonance of a number of circuit boards (abstract).

It would have been obvious to one having ordinary skill in the art at the time of this invention to include a plurality of circuit boards to mount additional circuits and a vibration damper between the circuit boards. The motivation to include a vibration damper would be to dampen the vibration resonance of the printed circuit boards.

Regarding claims 20, 24, 25.

The above references disclose the apparatus of claim 19.

HAMMOND discloses wherein said vibration damper includes supports (spacer 10, 10', 10'') extending between said circuit boards.

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over SAXELBY 6,549,409 in view of FIORINA 4,764,684.

Regarding claims 26-28.

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SAXELBY discloses the energy conversion apparatus of claim 12.

SAXELBY does not teach an inverter, a charger.

FIORINA teaches an energy conversion apparatus wherein said energy conversion device comprises a combination inverter (16) and battery charger (12).

It would have been obvious to one having ordinary skill in the art at the time of this invention to include in the energy conversion apparatus a charger and an inverter. The motivation to include the charger would be to charge an energy storage device for backup power and an inverter to provide an AC source of power.

Response to Arguments

Applicant's arguments filed 5/18/04 have been fully considered but they are not persuasive.

Applicant argues that SAXELBY teaches a power converter assembly that includes a mount for securing a circuit board remotely from the base in that regard Applicant respectfully submit that SAXELBY et al fail to teach or suggest an energy conversion apparatus that includes a mount for securing an energy conversion circuit to at least a base, as now generally set forth in amended claim 1.

Applicant's assessment of SAXELBY is correct for the power converter assembly, shown in figures 4A and 4B wherein components are mounted on both sides of a printed circuit board.

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The Examiner directs the applicant's attention to column 1, wherein SAXELBY discloses a typical DC-DC power converter assembly having power dissipating components mounted directly on the base plate so that dissipated heat is removed through the base plate.

The Applicant request that support be provided for each of the rejections set forth in the Office Action based on "Official Notice".

The Examiner has changed the rejections based on "Official Notice" with rejections based on art that support the Examiner's "Official Notice" rejections.

Any inquiry concerning this communication should be directed to Robert L. DeBeradinis whose number is (571) 272-2049. The Examiner can normally be reached Monday-Friday from 8:30 am to 5:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Brian Sircus, can be reached on (571) 272-2058. The Fax phone number for this Group is (703) 872-9306.

RLD

JULY 2, 2004

A handwritten signature in black ink, appearing to read "Robert L. DeBeradinis", written in a cursive style.